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In Situ Thermal Treatment of Chlorinated Solvents: Fundamentals and Field Applications

Fact Sheet and Order Information

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In Situ Thermal Treatment of Chlorinated Solvents: Fundamentals and Field Applications

Fact Sheet and Order Information

Chlorinated solvents, such as trichloroethene (TCE), are the most frequently occurring soil and groundwater contaminants at Superfund and other hazardous waste sites in the nation. The U.S. Environmental Protection Agency (EPA) estimates that, over the next several decades, site owners will spend billions of dollars to clean up these and other waste sites.

In Situ Thermal Treatment of Chlorinated Solvents: Fundamentals and Field Applications (EPA 542-R-04-010) provides an overview of the basic science and implementation of *in situ* thermal treatment technologies to remediate chlorinated solvents in source zones, dissolved in groundwater, or in the unsaturated zone. Specifically, the report provides information about the following *in situ* thermal treatment technologies:

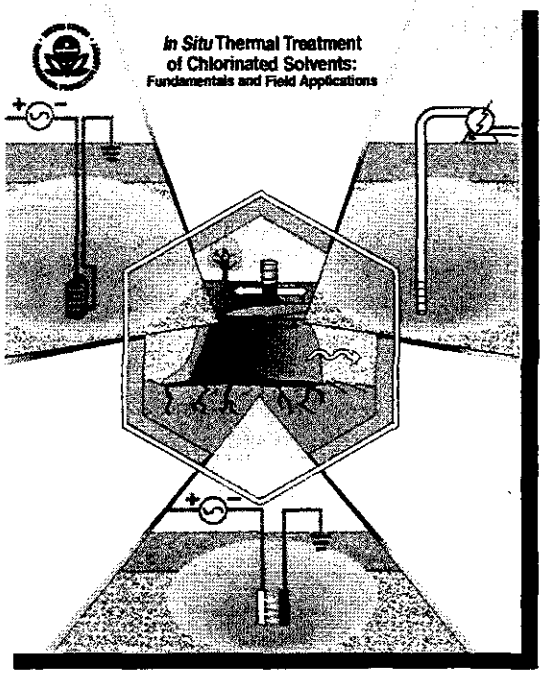
- **Steam Enhanced Extraction (SEE)**
- **Electrical Resistive Heating (ERH)**
- **Thermal Conductive Heating**

In situ thermal treatment technologies have proven to be effective in remediating source zones contaminated with chlorinated solvents, and increasingly are being used for that purpose. In addition, these technologies are being employed to treat a variety of other contaminants, including non-chlorinated volatile organic compounds, petroleum hydrocarbons, and semi-volatile organic compounds.

Report Description

The information in the report may be helpful to site managers, site owners, treatment technology vendors, regulators, consulting firms, and the public who may be involved in the cleanup of sites contaminated with chlorinated solvents. The report:

- Describes the principles and science behind the *in situ* thermal treatment of chlorinated solvents, including the effects of increased temperature on the fate and transport properties of chlorinated solvents in the source zone
- Describes the applicability and general engineering considerations associated with *in situ* thermal treatment for chlorinated solvents, including information about the proven effectiveness of these technologies in remediating chlorinated solvents within source zones under a wide range of site conditions
- Includes case studies and examples of actual field applications of *in situ* thermal treatment to chlorinated solvent remediation, including data on cost and performance



Ordering Information

A PDF version of this report is available at EPA's Hazardous Waste Cleanup Information (CLU-IN) web site at *http://www.cluin.org*. This site also includes a searchable database of thermal treatment project profiles accessible at *http://www.cluin.org/products/thermal*.

Questions and Comments

Send your questions and comments to Jim Cummings of EPA's Office of Superfund Remediation and Technology Innovation, by e-mail at *cummings.james@epa.gov* or phone at (703) 603-7197.